



PENGGUNAAN PROTEASE *Rhizopus sp.* UNTUK PERENDAMAN KULIT KAMBING PADA PROSES PENYAMAKAN KULIT

Intisari

Penelitian ini bertujuan untuk mengetahui pengaruh penggunaan protease *Rhizopus sp.* sebagai sumber enzim untuk perendaman kulit kambing pada proses penyamakan kulit dengan konsentrasi dan waktu perendaman yang berbeda terhadap kadar protein, air, struktur histologis, kekuatan tarik dan kemuluran kulit. Pengambilan data dilakukan dengan uji aktifitas enzim protease dari *Rhizopus sp.*, penggunaan enzim protease dari *Rhizopus sp.* sebagai agensia perendaman kulit kambing pada proses penyamakan kulit. Dua puluh tujuh side (tengahan lembar) kulit kambing jantan, digunakan sebagai materi penelitian dibagi secara acak kedalam sembilan kelompok perlakuan dalam 3 ulangan, dengan rancangan pola faktorial 3 x 3 yaitu 3 perlakuan waktu dengan 3 faktor konsentrasi enzim. Sembilan macam perlakuan disusun terutama dibedakan berdasar waktu perendaman dalam jam (J) dan konsentrasi enzim protease *Rhizopus sp.* dalam persen (E) yaitu perlakuan I 1J dan 0E, perlakuan II 2J dan 0E, perlakuan III 3J dan 0E, perlakuan IV 1J dan 0,5E, perlakuan V 2J dan 0,5E, perlakuan VI 3J dan 0,5E, perlakuan VII 1J dan 1E, perlakuan VIII 2J dan 1E serta perlakuan IX 3J dan 1E. Parameter yang diamati meliputi kadar protein, air, struktur histologi, kekuatan tarik dan kemuluran kulit kras. Kadar protein, air, kekuatan tarik dan kemuluran kulit dianalisis dengan analisis variansi pola faktorial 3 x 3. Jika terdapat perbedaan antar perlakuan dilanjutkan dengan uji kontras ortogonal. Sedang struktur histologis diamati secara visual dengan pembuatan preparat mikroskopis dan dianalisis secara deskriptif. Hasil analisis menunjukkan perbedaan yang sangat nyata ($P < 0,01$) terhadap kadar protein, air, kekuatan tarik kulit kras akan tetapi menunjukkan perbedaan yang tidak nyata terhadap kemuluran kulit kras. Penggunaan enzim protease *Rhizopus sp.* pada level 0,5% dan waktu perendaman 2 jam sudah mampu mendegradasi protein kulit, meningkatkan kekuatan tarik kulit kras. Penggunaan enzim protease *Rhizopus sp.* level 0,5% dengan waktu 3 jam baru dapat meningkatkan daya serap air pada proses perendaman kulit. Nilai kemuluran kulit kras tidak dipengaruhi oleh konsentrasi enzim protease *Rhizopus sp.* sampai level 1% dan waktu perendaman sampai dengan 3 jam. Dari penelitian disimpulkan bahwa diperoleh aktifitas enzim sebesar 1.360 Unit, enzim protease *Rhizopus sp.* dapat digunakan sebagai agensia dalam proses perendaman kulit kambing, makin tinggi konsentrasi enzim dan makin lama waktu perendaman mempermudah penghilangan lapisan epidermis dan mempercepat berkurangnya protein globular serta meningkatkan penyerapan kadar air. Kekuatan tarik kulit kras memenuhi SII. 0038-73 sedang nilai kemuluran sedikit diatas yang dipersyaratkan.

Kata kunci : *Rhizopus sp.*, protease, histologi, kekuatan tarik, kemuluran kulit.

THE UTILIZATION OF *Rhyzopus sp.* PROTEASE FOR SOAKING OF GOAT SKIN IN TANNED LEATHER PROCESSING

ABSTRACT

The study was conducted to investigate the effect of *Rhyzopus sp.* Protease as an enzyme sources in goat skin soaking at tanned processing, the effect different enzyme concentrations and soaking duration on protein content, water content, histological structure, tensile strength and leather elongation were studied. The collected data were done at protease enzyme activity testing of *Rhyzopus sp.*, applied as a soaking agent of leather tanning. Twenty seven sides of male goat skins were used in this study, and were randomly divided into nine treatment groups with 3 replications, respectively. The statistical analyses by using a 3x3 factorials of variance analyses, followed by a contrast orthogonal to compared the significant means obtained. The nine treatment groups were differed on soaking duration in hour (H), Enzyme protease *Rhyzopus sp* concentration in percent (E), the combination treatments were: 1H - 0E, 2H - 0E, 3H - 0E, 1H - 0.5E, 2H - 0.5E, 3H - 0.5E, 1H - 1E, 2H - 1E and 3H - 1E, respectively for PI, PII, PIII, PIV, PV, PVI, PVII, PVIII and PIX. The parameter measured were protein content, water content, histological structure, tensile strength, and percentage of elongation leather were analyzed by 3x3 factorial of variance analyses, followed by a contrast orthogonal for the significant means. The histological structures were analyzed by visual test and microscopic preparation. The results indicated that there were significant differences ($P < 0.01$) due to treatments on protein content, water content, tensile strength; but no significant difference on leather elongation test. The combination treatment of 0.5% *Rhyzopus sp* enzyme and 2 hours soaking had been degraded protein of skin, and increased it tensile strength. The combination treatment of 0.5% *Rhyzopus* - 3 hours soaking duration had increased water absorption of soaking stage. It was concluded enzyme activity was obtained 1,360 IU, that *Rhyzopus sp* protease usable as a bating agent in goat skin processing, which more higher enzyme concentration applied and more longer soaked duration resulted more faster globular protein released and to increased the water absorption. The tensile strength of crust leather still in SII. 0038 - 73, and the elongation was slight upper standard.

Key Words: *Rhyzopus sp.*, Protease, Histology, Tensile strength,
Leather elongation